

Application No. : 10/666,586
Responsive to an Office Action mailed August 24, 2005
Response filed November 22, 2005

REMARKS

Claims 1-24 are pending.

Amendments to the Claims

Claim 5 has been amended to replace "optical scanner" with -- particle counter -- to correct the antecedent basis. Support for the amendment is found, for example, in ¶ [0008] of the specification ("In a preferred embodiment, the particle counter detects particles optically, for example, using a laser scanner ...").

Claims 25-51 have been canceled without prejudice pursuant to an Election of Species requirement. Applicant reserves the right to present the subject matter of these claims in one or more future applications.

Claim Rejections Under 35 U.S.C. § 103

A *prima facie* rejection for obviousness requires: (1) a disclosure or suggestion of every element of the claim in the cited reference or references; (2) a suggestion or motivation, in the references or known to one skilled in the art, to modify or combine the references; and (3) a reasonable expectation of success. The suggestion to combine and the reasonable expectation of success must be found in the prior art. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As a preliminary matter, Applicant submits that the cited references do not disclose or suggest every element of the rejected claims, and the Examiner's stated motivations to combine are improper.

Claim Rejections over Scheer and Ballas.

Claims 1-2, 7-10, 14-21, and 24 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Scheer (U.S. Patent No. 5,194,297) in view of Ballas (U.S. Patent No. 4,812,396). Applicant submits that claims 1-2, 7-10, 14-21, and 24 are not obvious over Scheer and Ballas because the cited reference do not disclose or suggest every element recited in the claims.

Independent claim 1 recites in relevant part "contacting the substrate with a monomer, wherein the particle catalyzes the polymerization of the monomer." The Examiner refers to col. 3, ll. 37-44 of Scheer as disclosing a liquid monomer, and FIG. 1 reference number 13 as disclosing a particle. With respect to the liquid monomer, the Applicant believes that the Examiner is referring to the following sentence: "The *particles* could also be liquid droplets of an oily material, such as dioctyl phthalate, or a *liquid monomer* or a salt solution." Scheer at 3:42-

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44 (emphasis added). Here, Scheer discloses that the particles *are* a liquid monomer. In contrast, claim 1 includes a particle *and* a liquid monomer, a feature not disclosed or suggested in Scheer.

The Examiner also states that Scheer teaches a particle counter, referring to col. 5, ll. 17–20. Independent claim recites in relevant part a “method for detecting a particle on a substrate” comprising “detecting the particle using a particle counter.” Scheer discloses “a laser-based, *airborne* particle counter,” which “continually samples the *atmosphere* within the chamber.” Scheer at 4:10–15 (emphasis added). Nothing in Scheer discloses or suggests that the particle counter disclosed therein is capable of detecting a particle *on* a substrate. In fact, detecting a particle in the atmosphere is not even in the same field of endeavor as detecting a particle on a substrate.

The Examiner states that Scheer teaches all of the features of claim 1 except that the particle catalyzes the polymerization of the monomer. The Examiner refers to Ballas as disclosing a method for detecting enzymatic activity using a particle that catalyzes the polymerization of a monomer. As discussed above, Scheer neither discloses nor suggests a particle *and* a monomer, and does not disclose or suggest detecting a particle on a substrate. Ballas also does not disclose detecting a particle on a substrate. Instead, agglutinated particles are detected turbidimetrically, a measurement of *suspended* particles. Ballas at 9:3–16. Consequently, even if Ballas were combined with Scheer as the Examiner suggests, claim 1 would not be obvious over the combination.

Moreover, Ballas does not disclose or suggest a particle catalyzing the polymerization of a monomer. Instead, Ballas discloses particle agglutination. Ballas at 3:32–34 (“The binding partner is used at a concentration which provides substantial agglutination of the highly refractive particles.”). As discussed in Ballas, agglutination is the linking together of the particles disclosed therein. Ballas at 3: 34–36 (“Agglutination occurs because the multivalent binding partner can act as a cross-linking agent to link two particles together.”). Agglutination is *not* the polymerization of a monomer. Ballas discloses monomers only in connection with the manufacture the particles themselves. Ballas at 5:10–30.

The Examiner also has not provided a proper motivation to combine the references. As discussed above, the motivation to combine must be found either in the prior art, or known to one skilled in the art. The Examiner’s stated motivation appear to be that one skilled in the art would

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be motivated to combine the method for detecting particle on a substrate (of Scheer) with the particle catalyzed polymerization of a monomer (of Ballas) to accurately detect enzyme activity with good sensitivity and high speed. Setting aside the issue of the accuracy of this characterization of the disclosures of Scheer and Ballas, the Examiner has provided no evidence that Ballas by itself does not accurately detect enzyme activity with good sensitivity and high speed.

Even if Scheer and Ballas were combined, there would be no reasonable expectation of success. Scheer discloses that the particles are exposed to a ^{85}Kr source "in order to keep the particles from being electrostatically attracted to one another and sticking to one another." Scheer at 3:30-36. Accordingly, these particles would be not agglutinate because they are dispersed. Furthermore, the particles in Scheer are atomized to form a fine mist or aerosol in the air. Scheer at 3:14-28. The assay of Ballas is performed under aqueous conditions. *See, for example*, Example 1, Ballas at 9:19-12:5. Accordingly, one skilled in the art would have no expectation that the cited combination would be operative.

Ballas is also non-analogous art. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992); M.P.E.P. 2141.01(a).

Ballas is not in the same field of endeavor as the pending claims. Claim 1 recites in relevant part "the substrate is used in the fabrication of an integrated device." Ballas discloses biological assay: a method for detecting enzymatic activity. The particles of Ballas are modified with ligands. For example, in Example 1, Ballas modifies the surfaces of particles comprising a polystyrene core, a polyvinyl naphthalene intermediate shell, and a polyglycidyl methacrylate outer shell with 3-nitro-4-hydroxybenzoic acid. Ballas at 9:26-36. The binding agent is an antibody. Ballas at 9:29-31. The Examiner has provided no evidence of that any of these materials are relevant to the fabrication of an integrated device.

Ballas is also not pertinent to the particular problem with which the inventor was concerned. Particle contamination in the manufacture of integrated devices is among the problems identified in the present application. Specification at ¶ [0002] ("Particulate

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contaminants are undesirable in the fabrication of integrated devices.”). Ballas, on the other hand, is directed to an improved biological assay. As discussed above, Ballas does not disclose or suggest detecting a particle on a substrate or a particle that polymerizes a monomer. Accordingly, Ballas is not pertinent to the manufacture of integrated devices, and is not analogous art.

For these reasons, independent claim 1 is not obvious over Scheer and Ballas. Because claims 2, 7-10, 14-21, and 24 are dependent on claim 1 and recite additional features, these claims are also not obvious over the cited combination for at least the same reasons.

Claim Rejections over Scheer, Ballas, and Asano.

Claim 3 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Scheer in view of Ballas and further in view of Asano (JP 2003031542). As discussed above, claim 1 is not obvious over Scheer and Ballas. Claim 3 is dependent on claim 1, and further provides, in relevant part, “the particle counter is capable of detecting particles on both sides of the substrate without unmounting the substrate.” The Examiner states that the abstract of Asano discloses such a feature. Even if one were to accept the Examiner’s characterization of the disclosure as true, because Asano does not cure the deficiencies in the disclosures of Scheer and Ballas discussed above, claim 3 is also not obvious over the cited combination for at the same reasons as provided above for claim 1. Moreover, the Examiner’s motivation for combining Ballas with Scheer is inconsistent with the motivation for combining Asano with Scheer and Ballas. As discussed above, the Examiner’s purported motivation for combining Ballas with Scheer is to provide an improved enzyme assay. But the Examiner’s motivation for combining Asano with Scheer and Ballas is for detecting particles during wafer cleaning.

Claim Rejections over Scheer, Ballas, and Tullis.

Claims 4 and 6 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Scheer in view of Ballas and further in view of Tullis (U.S. Patent No. 5,144,524). Claims 4 and 6 are dependent on claim 1, which is not obvious over Scheer and Ballas for at least the reasons provided above. The Examiner states that Tullis discloses an optical particle counter that detects absorbance, fluorescence, reflectance, refractive index, or polarization. Even if the Examiner’s characterization of the disclosure of Tullis were accepted as true, claims 4 and 6 would still be non-obvious over the cited combination of references because Tullis does not address the deficiencies in the disclosures of Scheer and Ballas discussed above. Again, the Examiner’s

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motivation for combining Tullis with Scheer and Ballas (detecting and analyzing particles on a silicon wafer) is inconsistent with the stated motivation to combine Scheer and Ballas in the first place (improved enzymatic assay). For at least these reasons, claims 4 and 6 are not obvious over the cited combination.

Claim Rejections over Scheer, Ballas, and Yoshimura.

Claims 11-13 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Scheer in view of Ballas and further in view of Yoshimura (U.S. Patent No. 5,194,548). Claims 11 and 13 are dependent on claim 1, which is not obvious over Scheer and Ballas for at least the reasons provided above. The Examiner states that Yoshimura discloses a plurality of monomers contacted with the substrate simultaneously or sequentially. Yoshimura is not germane to addressing the deficiencies in the disclosure of Scheer and Ballas discussed above. Accordingly, claims 11-13 are also not obvious over the cited references for at least the same reasons as provided above for claim 1. In this rejection, the Examiner provided as a motivation the improvement of a nonlinear optical material formed by molecular beam deposition or molecular beam epitaxy. Again, this motivation is inconsistent with the improved enzymatic assay motivation discussed above. Moreover, it is unclear how the cited combination achieves an improved nonlinear optical material formed by molecular beam deposition or molecular beam epitaxy. Finally, the Examiner has provided no explanation of why one skilled in the art would use a monomer that generates a nonlinear optical material in a method for detecting a particle. For at least these reasons, claims 11-13 are not obvious over the cited combination.

Claim Rejections over Scheer, Ballas, and Hahn.

Claims 22-23 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Scheer in view of Ballas and further in view of Hahn (U.S. Patent No. 4,170,663). Claims 22 and 23 are dependent on claim 1, which is not obvious over Scheer and Ballas for at least the reasons provided above. The Examiner states that Hahn discloses benzyl bromide as a free radical initiator. The Examiner does not state that Hahn addresses any of the deficiencies in the disclosures of Scheer and/or Ballas discussed above. Accordingly, even if the Examiner's characterization of the disclosure of Hahn were accepted as correct, claims 22 and 23 are not obvious over the cited combination of references for at least the reasons provided above for claim 1. The Examiner's motivation to combine Hahn is to produce a low gloss, burnish resistant,

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radiation cured material. Again, this motivation is inconsistent with the stated motivation to provide an improved enzymatic assay in combining Scheer and Ballas. The Examiner has also not explained the desirability of a low gloss, burnish resistant, radiation cured material in connection with the subject matter of claims 22-23. For at least these reasons, claims 22-23 are not obvious over the cited references.

For the reasons provided above, Applicant submits that all rejections have been overcome. If the Examiner believes that any remaining issues could be resolved in a conversation with the Applicants attorney, the Examiner is invited to contact the undersigned. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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